

REMARKS

I. Introduction

In response to the Office Action dated August 16, 2006, Applicant has added claim 36. Support for this new claim can be found at, for example, page 4, lines 22-23 of the specification. No new matter has been added.

For the reasons set forth below, Applicant respectfully submits that all pending claims are patentable over the cited prior art references.

II. The Rejection Of Claims 27 and 31-32 Under 35 U.S.C. § 112, First Paragraph

Claims 27 and 31-32 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner asserts that the specification fails to disclose the subject matter recited in these claims. Applicant respectfully disagrees, and submits that support for features recited in these claims can be found at, for example, page 6, line 25 to page 7, line 15 of the specification. Particularly, the specification provides the disclosure of a flexible multilayer packaging material that includes an assembly of a ceramic barrier layer and an active polymeric barrier (6:25-27), and a substrate having an assembly of alternating active polymeric barriers and ceramic barrier layers (e.g., a substrate having at least one active polymeric barrier layer and at least one ceramic layer) (7:11-12). The surface of the substrate facing towards the outside environment (i.e., a second surface) can have a ceramic barrier layer (7:13-15), while the other surface of the substrate on which the ceramic barrier layer is situated (e.g., 110 of Fig. 3) is closer to the functional area (e.g., 150/160/170) than the second surface.

For at least the foregoing reasons, Applicant respectfully submits that the subject matter of the rejected claims is described in Applicant's specification. Accordingly, Applicant respectfully requests that the pending rejection under 35 U.S.C. § 112, first paragraph, be withdrawn.

III. The Rejection Of Claims 17-32 Under 35 U.S.C. § 103

Claims 17-32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over USP No. 7,074,501 to Czeremuszkin in view of USP No. 5,312,689 to Dasher or USP No. 6,710,542 to Chun. Applicant respectfully traverses this rejection for at least the following reasons.

Claim 17

A. The organic coating of Czeremuszkin does not correspond to the claimed first active polymeric barrier layer

Claim 17 recites in-part a first flexible multilayer packaging material having a first active polymeric barrier layer that binds moisture and oxidizing agents. In the statement of rejection, the Examiner asserts that the organic coating 16 of Czeremuszkin corresponds to the claimed first active polymeric barrier layer. Applicant respectfully disagrees.

As expressly disclosed in Czeremuszkin, permeation through plastic films and organic coatings is controlled by diffusion (6:47-48) as a permeant “diffuses through the substrate plastic film 1 and passes through discontinuities or defects (openings) in the first inorganic coating 14 ... the first organic coating 16 and ... through openings in the second inorganic coating 14” (6:65-7:2). Functionally, organic coatings “provide a tortuous path of permeation ... [and] distribute the permeant over a wide area between inorganic coatings (8:16-20).”

Based on this disclosure, Applicant respectfully submits that the organic coating 16 of Czeremuszkin cannot correspond to the claimed first active polymeric barrier layer. Claim 17 recites a first active polymeric barrier layer (e.g., a layer that binds moisture and oxidizing agents). The organic coating 16 of Czeremuszkin does not bind moisture and oxidizing agents. The inorganic layer 14 is used to provide “very limited area accessible to permeation ... due to presence of defects” and “a near perfect barrier elsewhere” (8:1-12), because the organic coating 16 “does not have high-barrier properties” (8:41-42). Czeremuszkin also notes that without the inorganic coating, the “permeation across the whole [organic] coating, based on ‘solubility-diffusion’ mechanism, would be high” (8:42-45). Thus, if the organic coating 16 allows for

permeation of gas, such as air or oxygen (11:19-23), the coating permeability does not bind moisture and oxidizing agents.

Thus, Applicant submits that the organic coating 16 of Czeremuszkina does not correspond to the claimed first active polymeric barrier layer.

B. The combination of Czeremuszkina and Dasher is improper

In rejecting claim 17, while the Examiner asserts that the organic coating 16 of Czeremuszkina corresponds to the claimed first active polymeric barrier layer, the Examiner acknowledges that this organic coating 16 does not include a material comprising polymeric matrix with anhydrides. To cure these deficiencies, the active polymer barrier 22 of Dasher is relied upon to arrive at the claimed invention. Applicant respectfully disagrees with the proposed combination of Czeremuszkina and Dasher for reasons set forth below.

Applicant initially stresses the requisite motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. §103 is not an abstract concept but must stem from the applied prior art as a whole and have realistically impelled one having ordinary skill in the art to modify a reference or combine references to arrive at a claimed invention. *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989). It has been judicially held that a generalization does not establish the requisite motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995).

In the Office Action, the Examiner attempts to overcome the deficiency in Czeremuszkina by asserting that one of ordinary skill in the art would have found it obvious to replace Czeremuszkina's organic layer with a polymer matrix with anhydride provided in Dasher so as "to prevent migrating matter" (page 4, 2nd ¶ of Office Action). Applicant submits that the purported motivation to modify Czeremuszkina using Dasher is defective and that a person having ordinary skill in the art would not have been motivated to modify the organic coating of Czeremuszkina by reading Dasher.

Particularly, Dasher describes ophthalmic lens having a barrier layer 22 that is impermeable to migrating components (3:20-24), which include water and anhydride. The barrier layer 22 is situated between an epoxy layer and an urethane layer in order to solve the “migrating problem” during the curing of the epoxy layer (2:61-3:32). Further, Dasher suggests using commercially available polyolefin copolymers and terpolymers (3:61-63) modified with acid or anhydride function groups (3:29-32) as the barrier layer 22, because polyolefins without the presence of acid or anhydride functional groups are “inherently difficult to bond” (3:30-41). The acid or anhydride functionality in the modified polymers improves polyolefins’ adhesion characteristic (3:48-50) to the epoxy layer and the urethane layer.

Based on the foregoing disclosures, Applicant respectfully submits that one skilled in the art would not apply the teachings of Dasher in Czeremuszkina. Czeremuszkina teaches placing an organic coating “in direct contact with” (4:49-51) and “between inorganic coatings” (8:14-23) to distribute permeant over a wide area between the inorganic coatings. In contrast, Dasher uses a modified polyolefin to improve bonding to an epoxy and a urethane and to prevent migration of anhydride from the curing agent, which could migrate into the urethane layer. Czeremuszkina does not employ an urethane layer or an epoxy layer, and thus there is no need to mitigate problems related to migration of anhydride into a urethane layer.

Additionally, Czeremuszkina forms a multilayer inorganic/organic barrier structure, not a laminate of multiple organic layers, as Dasher forms. Dasher’s teaching of incorporating anhydrides into a polyolefin to improve bonding of the polyolefin with an epoxy layer and an urethane layer does not teach that incorporating anhydrides into a polyolefin would improve bonding with inorganic layers. Thus, there is no motivation to modify the teachings of Czeremuszkina with the teachings of Dasher.

Accordingly, Applicant respectfully submits that the alleged motivation is based solely on improper hindsight reasoning, whereby the Examiner has selected bits and pieces of each prior art and used only Applicant’s claims as a guide to reconstruct the claimed invention. **M.P.E.P. § 2145(X)(A)** bars the Examiner from including “knowledge gleaned only from

applicant's disclosure." Therefore, the proposed combination of Czeremuszkina and Dasher fails to establish *prima facie* obviousness of the pending claims.

Additionally, Applicant would like to remind the Examiner that the mere identification of claim features in disparate references does not establish the requisite realistic motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. §103. *Grain Processing Corp. v. American-Maize Products Co.*, 840 F.2d 902, 5 USPQ2d 1788 (Fed. Cir. 1988).

For at least the foregoing reasons, Applicant respectfully submits that the proposed modification of Czeremuszkina using the teachings taught by Dasher is improper, and requests that the rejection be withdrawn.

C. Chun does not disclose the claimed first active polymeric barrier layer

In rejecting claim 17, while the Examiner asserts that the organic coating 16 of Czeremuszkina corresponds to the claimed first active polymeric barrier layer, the Examiner acknowledges that this organic coating 16 does not include a material comprising polymeric matrix with anhydrides. To cure this deficiency, the epoxy planarization layer 21 of Chun is relied upon to arrive at the claimed invention (4:13-16). Applicant respectfully traverses this proposed combination of Czeremuszkina and Chun for reasons set forth below.

Chun describes an organic light emitting diode (OLED) that utilizes "a sealing layer comprising a combination of an inorganic layer of SiNH 22 and an epoxy planarization layer 21 to provide protection against oxygen and water (see, e.g., 3:12-14)." The epoxy planarization layer "comprises a clear epoxy-anhydride system ... and is cured at 125°C for 2 hours (4:10-13)." In short, the finalized OLED of Chun includes a cured epoxy-anhydride system in the epoxy planarization layer. However, as is known in the art, a cured epoxy-anhydride system indicates crosslinking of epoxy functional groups with anhydride functional groups, in which the anhydride components serve as a binder to the epoxy elements in the epoxy-anhydride system. The cured epoxy planarization layer therefore is made of crosslinked epoxy molecules and anhydrides.

In this regard, as is known in the art, crosslinked anhydrides are incapable of binding water or oxygen as the crosslinked anhydrides have undergone reaction with epoxy molecules. The Examiner is kindly reminded that it is important to distinguish between chemical substances that are ingredients of a chemical reaction (e.g., anhydrides for epoxy and anhydride for curing reactions as disclosed in Dasher and Chun, respectively) and similar chemical substances that are present in a finished material (e.g., a first active polymeric barrier layer includes a material comprising a polymeric matrix with anhydrides). While an epoxy/anhydride resin is so named based on its starting materials (e.g., before being subject to curing), anhydrides in an epoxy/anhydride system are no longer anhydrides after being subject to curing reactions to form an epoxy/anhydride resin. For example, polymers, such as polyethylene, are formed from ethylene monomers. Ethylene is, in part, defined by its double bond. After being subject to chemical reaction, the resulting polyethylene no longer contains ethylene monomers in a finished material, because the double bonds of the ethylene monomers are broken during polymerization.

Thus, Chun does not disclose a polymeric matrix with anhydride, but rather discloses a cured epoxy planarization layer that has been formed by reacting anhydrides with epoxy molecules to form a crosslinked system. However, this cured epoxy planarization layer 21 of Chun is incapable of binding water or oxygen as the resulting planarization layer 21 no longer contains a polymeric matrix with anhydrides after being subject to anhydrides/epoxy reactions.

For at least these reasons, Applicant respectfully submits that the epoxy planarization layer 21 of Chun cannot correspond to the claimed first active polymeric barrier layer, because the epoxy planarization layer 21 of Chun does not bind moisture or oxidizing agents as recited in claim 17.

Thus, as each and every limitation must be either disclosed or suggested by the cited prior art in order to establish a *prima facie* case of obviousness (see, **M.P.E.P. § 2143.03**), and the combination of Czeremuszkin, Dasher and Chun fails to do so, Applicant respectfully submits that claim 17 is allowable over the cited references.

Claim 31

Claim 31 recites, in part, an organic electronic device that includes a first flexible multilayer packaging material having a first active polymeric barrier layer that binds moisture and oxidizing agents.

However, as discussed above with respect to claim 17, the proposed combination of Czeremuszkín and Dasher or Chun does not arrive at the claimed invention. Thus, for analogous reasons presented above with respect to claim 17, Applicant respectfully submits that claim 31 is allowable over the cited references.

Furthermore, claim 31 recites in part a flexible substrate having a first surface and a second surface, where the first surface is closer to the functional area than the second surface and the second surface comprises a ceramic barrier.

However, it does not appear that the pending rejection has addressed the foregoing claimed features. Having failed to specifically identify wherein an applied reference discloses each feature of a claimed invention as claimed, the pending Office Action has, in effect, denied Applicant's procedural due process of law, in that it is difficult for the Applicant to respond to the rejection by shooting arrows into the dark. *In re Mullin*, 481 F.2d 1333, 179 USPQ 97 (CCPA 1973). Also, Applicant submits that none of the cited references disclose or suggest these features. Accordingly, Applicant respectfully submits that claim 31 is allowable.

IV. The Rejection Of Claims 33-35 Under 35 U.S.C. § 103

Claims 33-35 are rejected under 35 U.S.C. § 103(a) as being unpatentable over USP No. 6,624,568 to Silvernail in view of USP No. 5,587,233 to König or USP No. 6,333,103 to Ishii. Applicant respectfully traverses this rejection for at least the following reasons.

Claim 33

Claim 33 recites, in part, a substrate having an assembly of at least one active polymeric barrier layer, and at least two adjacent first and second ceramic barrier layers that are in direct

contact with each other, the first and second ceramic barrier layers exhibiting different microstructures.

In the statement of rejection, the Examiner asserts that the barrier layers 122a/122b of Silvernail are in direct contact with each other. Applicant respectfully disagrees. As shown in Fig. 1, the barrier layers 122a/122b of Silvernail are not in direct contact with each other. Rather, the barrier layers 122a/122b are separated by, for example, the planarization material 121b. König and Ishii do not cure these deficiencies, because König and Ishii do not teach or suggest two barrier layers, let alone disclose that such barrier layers are in direct contact with each other.

Thus, as each and every limitation must be either disclosed or suggested by the cited prior art in order to establish a *prima facie* case of obviousness (see, **M.P.E.P. § 2143.03**), and the combination of Silvernail and König or Ishii fails to do so, Applicant respectfully submits that claim 33 is allowable over the proposed combination of Silvernail and König or Ishii.

Claim 34

Claim 34 recites the first and second ceramic barrier layers comprise α -Al₂O₃ and γ -Al₂O₃, respectively.

In the statement of rejection, the Examiner asserts that König, at col. 2, line 47, discloses a ceramic layers consists of α -Al₂O₃ and γ -Al₂O₃, and Ishii, at col. 8, lines 24-27, discloses a ceramic layer that includes a mixture of α -Al₂O₃ and γ -Al₂O₃ (see, page 8 of Office Action). Applicant respectfully disagrees, because neither König nor Ishii provide one barrier layer with α -Al₂O₃ and another barrier with γ -Al₂O₃. König and Ishii do not teach two layers that exhibit different microstructures that contact one another (e.g., one layer with α -Al₂O₃ directly contacting a layer of γ -Al₂O₃). Rather, König describes an aluminum oxide layer that consists of α -Al₂O₃ or γ -Al₂O₃ or a combination thereof, but not layers of different microstructure material adjacent to and directly contacting one another. Similarly, Ishii teaches mixtures of α -Al₂O₃ with other types of Al₂O₃, e.g., θ , γ , δ , or κ , but not layers of different microstructure material.

Thus, as each and every limitation must be either disclosed or suggested by the cited prior art in order to establish a *prima facie* case of obviousness (see, **M.P.E.P. § 2143.03**), and the combination of Silvernail and König or Ishii fails to do so, Applicant respectfully submits that claim 34 is allowable over the proposed combination of Silvernail and König or Ishii.

Claim 35

Claim 35 recites, in part, a substrate having an assembly of at least one active polymeric barrier layer and at least two adjacent first and second ceramic barrier layers, the first and second ceramic barrier layers having the same composition but exhibiting different microstructures.

In the pending rejection, the Examiner admits that Silvernail does not disclose two ceramic barrier layers exhibiting different microstructures, but asserts that König teaches an aluminum oxide layer including α -Al₂O₃ and γ -Al₂O₃, and separately, Ishii teaches an aluminum oxide layer including α -Al₂O₃ and γ -Al₂O₃.

However, as discussed above with respect to claim 34, the Examiner's proposed combination would not result in two adjacent barrier layers with the same composition and different microstructures. Further, both König and Ishii fail to teach two different adjacent layers that exhibit different microstructures.

Thus, as each and every limitation must be either disclosed or suggested by the cited prior art in order to establish a *prima facie* case of obviousness (see, **M.P.E.P. § 2143.03**), and the combination of Silvernail and König or Ishii fails to do so, Applicant respectfully submits that claim 35 is allowable over the proposed combination of Silvernail and König or Ishii.

New Claim 36

Claim 36 recites a first active polymeric barrier layer that includes polystyrene. New claim 36 depends on claim 1, which is not anticipated or obvious over the cited references, and is submitted to be allowable by virtue of its dependence on claim 1.

V. All Dependent Claims Are Allowable Because The Independent Claims From Which They Depend Are Allowable

Under Federal Circuit guidelines, a dependent claim is neither anticipated nor rendered obvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplicatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as independent claims 17, 31, 33 and 35 are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also in condition for allowance.

VI. Conclusion

By responding in the foregoing remarks only to particular positions taken by the Examiner, the Applicant does not acquiesce with other positions that have not been explicitly addressed. In addition, Applicant's arguments for the patentability of a claim should not be understood as implying that no other reasons for the patentability of that claim exist.

For all of the reasons set forth above, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicant's representative at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 06-1050 and please credit any excess fees to such deposit account.

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